

Mack Chassis - Automated Manual Transmission (AMT, mDrive) Repair Strategy; Component Inspection And Reuse Guidelines And Instructions; Required Tasks When Disassembling An AMT For Repair - For Use With Service News SNM20-001a



> Internal Content

This solution should be used together with [SNM20-001a](#)

NOTE: Duplicated or excessive labor charged to a claim due to a component failure that is missed during initial diagnosis and teardown may be denied by warranty.

Inspection


- Operation [4311-06-02-01 Transmission Reuse or Replacement Guidelines](#), found under the Service tab in Impact, should be used for guidance when inspecting the components below. This operation contains very detailed information on what are and are not acceptable appearances, conditions and specifications for each component.

- Individual components removed during disassembly for repair should be inspected and replaced as necessary.

- All major areas of the transmission should be inspected **prior to making repair decisions** to prevent items from being overlooked:

Several of the items listed below may already have been inspected during the diagnostic process

- Control Housing Assembly
- Main shaft and countershaft components in the main gearbox
- Input shaft, radial and/or axial play
- Rear of gearbox and range housing assembly
 - The PTO cover or range housing assembly should be removed as necessary to complete inspection
 - If a significant amount of debris is found in the gearbox:
 - Remove the range housing assembly
- Remove the lubrication pipe (lube tube) from the main shaft

 Live UI < for a buildup of metal flakes inside the main shaft that is also visible in the lubrication pipe and on the o-rings.

- **If this condition is observed the main box and oil cooler must be replaced.**

- **NOTE:** A loose or failed high range synchronizer cone does not automatically warrant replacement of the complete synchronizer assembly or range housing if the short gearbox is being replaced.

Repair

AS OF 26 MARCH 2019: Per SNM19-020e an eService case is required prior to utilizing any of the information below. The eService case MUST INCLUDE a THOROUGH description of the initial symptoms A ND findings from the Inspection section.

The charts below outline the correct repair path for the most AMT issues encountered. Once the failure is identified, refer to the correct description at the top of each chart for the proper components that should be used for each repair. If the secondary (yellow) option needs to be used due to progressive damage or parts availability, eService will advise on how to proceed.

- **Green** - Denotes the typical repair for the given failure. This option should be considered first.

- **Yellow** - Denotes the secondary option if progressive (additional) damage is found upon inspection or if there are issues with parts availability

• **NOTE:** Tech support should be contacted via eService for further review if a secondary option is required due to parts availability **ONLY**.

All Components

	Remanufactured							Internal Cable Harness
	Basic	Short	Range Housing	Synchro Repair Kit	Control Housing, Without TECU	Control Housing, With TECU	TECU ONLY	
Lubrication								
Low Lube	x							
Oil Leak Resulting in Catastrophic Failure	x							
Wear and Breakage								
Gear Engaging Tooth Damage	x	x						
Excessive Output Shaft Play	x		x					
Loss of Input/Main Shaft Preload	x	x						
Broken Shift Rod					x			
Shift Fork Broken					x			
Split Synchro Detent Plunger Failure	x	x						
Screws Loose or Missing in GCU					x			
Towing	x	x						
Loose/Broken Range Cone	See Chart Below							
Noise								
Gear Whine	x	x						
Grinding: Range Shift High to Low AND Low to High			x	x				
Grinding: Range Shift Low to High ONLY			x	x				
Grinding: Range Shift High to Low ONLY			x	x				
Fault Codes (DTCs) and Data Link								
Fault(s): Jumping Out of Gear (Splitter)		x			x			
Fault(s): Jumping Out of Gear (1-R)		x			x			x
Fault(s): Jumping Out of Gear (2-3)		x			x			x
Fault(s): Jumping Out of Gear (Range)			x					
Loss of Communication							x	

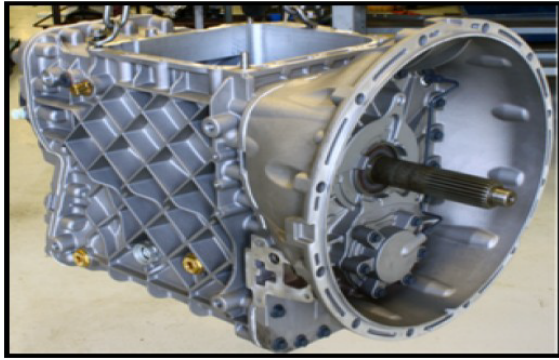
Range Cone (HRC)

	Remanufactured			
	Basic	Short	Range Housing	Synchro Repair Kit
Loose HRC ONLY			x	x
Loose HRC With Damaged Friction Ring			x	x
Broken HRC			x	x
Broken HRC With Damaged Friction Ring	x		x	x
Worm/Damaged Friction Ring			x	x
HRC With Main Box Gear Damage	x	x		
HRC With Main & Auxiliary Box Gear Damage	x			
HRC With Auxiliary Box Gear/Housing Damage			x	x

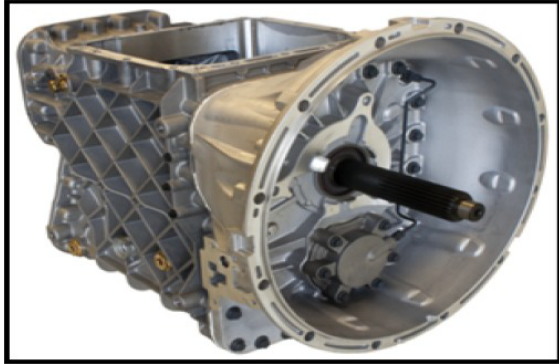
Pictures and descriptions of common replacement parts can be found below:

Basic Transmission

 Live UI



- Same as complete, but does not include the CCA, TECU, or Top Cover Assembly & Solenoid



Short Transmission

Same as Basic, but without Range Shift Assembly



Range Housing Assembly

 Tags

[snm19-020](#) [k53011517](#) [mdrive hd](#) [reuse replace](#)
[amt reuse replace](#) [amt-c](#) [amt-d](#) [amt-f](#)
[mdrive](#) [repair replace](#)

Related links and attachments

[SNM20-001a](#)
[SNV19-020e TSS Pre-Authorization of I-Shift Repairs](#)

 **Feedback**

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to help improve the content of this article

43325-2 Transmission Reuse or Replacement Guidelines

The intent of this bulletin is to provide reuse or replacement guidelines for the North American market and give some indication of what type and degree of damage is required to replace a M-Drive transmission. The pictures and descriptions contained in this bulletin are intended as discreet examples of wear. The complete transmission must be evaluated to make the correct decision based on the failure being investigated.

Clear pictures from the dealer are invaluable and should be required when making a replacement decision.

For additional information about M-Drive transmission design and function, refer to Function Group 431, Transmission, Mechanical.

Contents

- [Range Housing and Synchronizer](#)
- [PTO](#)
- [Range Synchronizer Assembly Error](#)
- [Range Shift Fork](#)
- [Main Shaft Speed Sensor Tone Ring](#)
- [Countershaft Brake Assembly](#)
- [Gears and Engaging Teeth \(Reuse\)](#)
- [Gears and Engaging Teeth \(Replace\)](#)
- [Input Shaft](#)
- [Shift Forks and Control Housing](#)
- [Shift Fork Brass Pads \(Reuse\)](#)
- [Shift Fork Brass Pads \(Replace\)](#)
- [Split Synchronizer \(Reuse\)](#)
- [Split Synchronizer \(Replace\)](#)
- [Split Synchronizer Plunger and Spring](#)
- [Low Lube Failure](#)
- [Main Case](#)
- [Towing Damage](#)
- [Oil Pump](#)
- [Coolant / Water Contamination](#)
- [Main Shaft Inspection](#)
- [Clutch Housing](#)

Note: Information is subject to change without notice.

Illustrations are used for reference only and can differ slightly from the actual vehicle being serviced. However, key components addressed in this information are represented as accurately as possible.

MACK TRUCKS

Service News



To: U.S. and Canada Mack General Managers
U.S. and Canada Mack Service Managers
U.S. and Canada Mack Service Technicians
U.S. and Canada Mack Warranty Managers

Bulletin: SNM19-020e
Date: March 26, 2019
Valid to: Until Further Notice
Replaces: SNM19-020d and SNM17-020c
Action Required? **Yes**

From: Greg Holderfield – Director, Product Reliability

Subject: Tech Support Pre-Authorization of All mDRIVE Repairs

This letter is to emphasize and clarify procedures currently in place for mDRIVE related repairs.

- Where initial diagnosis determines the I-Shift needs to be removed for final diagnosis, proceed in accordance with CBR Solution **K45673535** *Mack Chassis - Automated Manual Transmission (AMT, mDrive) Repair Strategy - Section Inspection*.
- Initiate an eService case with Tech Support **prior to making any repair decisions** and report all findings.
- Tech Support will provide direction on how to continue with diagnostics, repair methods and swing unit options.
- Input shaft kit repair procedure will be utilized whenever possible.
- For simple AMT related repairs not requiring transmission removal, proceed without an eService case in accordance with existing SRTs and Warranty policies.
- For diagnostic time up to 4 hours, a diagnostic timesheet is not required. In cases where the diagnostic time exceeds such, a timesheet is required for approval regardless of technician level.
- To ensure full consideration and prompt payment of your claim, file the claim in accordance with the above referenced CBR Solution and applicable Warranty policies.

Our ambition is to optimize all mDRIVE repairs and streamline warranty claim processing. We believe this will support you to make repairs with confidence, to submit warranty claims with assurance, and above all to increase our customers' Uptime.

If you have any questions or need additional information, please contact your DSM or you may call the Technical Support team at 800-888-2039.

MACK TRUCKS

Service News



To: U.S. and Canada Mack General Managers
U.S. and Canada Mack Service Managers
U.S. and Canada Mack Service Technicians
U.S. and Canada Mack Warranty Managers

Bulletin: SNM20-001a
Date: January 29, 2020
Valid to: Until Further Notice
Replaces: SNM20-001 and SNM17-020c
Action Required? **Yes**

From: Greg Holderfield – Director, Technical Support Services

Subject: Dealer Tech Support Pre-Authorization of All mDRIVE Repairs

This letter is to emphasize and clarify procedures currently in place for mDRIVE related repairs.

- Where initial diagnosis determines the mDRIVE needs to be removed for final diagnosis, proceed in accordance with CBR Solution **K45673535** *Mack Chassis - Automated Manual Transmission (AMT, mDrive) Repair Strategy - Section Inspection*.
- Clutch components, including the CCA, are excluded from this policy and an eService case is not required.
- **For dealers who identify input shaft repair is solely appropriate and they are authorized to perform such, an eService case does not need to be submitted.**
- **For all other situations**, initiate an eService case with Dealer Tech Support **prior to making any repair decisions** and report all findings.
- Dealer Tech Support will provide direction on how to continue with diagnostics, repair methods and swing unit options.
- Input shaft kit repair procedure will be utilized whenever possible.
- For simple AMT related repairs not requiring transmission removal, proceed without an eService case in accordance with existing SRTs and Warranty policies.
- For diagnostic time up to 4 hours, a diagnostic timesheet is not required. In cases where the diagnostic time exceeds such, a timesheet is required for approval regardless of technician level.
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